BLANKOM®

Professional Headend Solutions

Operating instructions

SAT-TV Demodulator

DVB-S/-S2 → CI → ASI-TS & A/V

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SDB 908

Part N°: 9726.01

9726.02

...Setting Signals

1. Safety and operating instructions

When installing, starting-up and adjusting the modules, it is necessary to consider the system specific references in the manual instruction.

The modules may only be installed and started up by authorized technical personnel.

When installing the modules into the receiving points, the adherence of the EMC regulations is to be secured.

The installing and wiring have to be done without voltage.

All active modules may only be operated with the Headend Controller HCB x00 or Bus Extender BEB x00.

The main voltage and the operating voltage of the modules working by DC have to be in complience to the operating parameters described in the technical data.

With all work the defaults of the DIN EN 50083 have to be considered. Especially the safetyrelevant execution of the DIN EN 60728-11 [6] is necessary.

WEEE-Reg.-Nr. DE 50389067

2. Device variants

SDB 908	9726.01	DVB-S/-S2 → CI → ASI-TS & A/V incl. AC3 (Dolby)
SDB 908	9726.02	DVB-S/-S2 → CI → ASI-TS & A/V

Minimum software requirements for HCB x00:

9650.03:	version 2.34
9650.04/.05:	version 3.18
9652.01:	version 3.23
9653.01:	version 3.27
9653.02:	version 3.28

→ Version updates: *http://www.blankom.de/en/download/software/headend-update/*

3. Software options

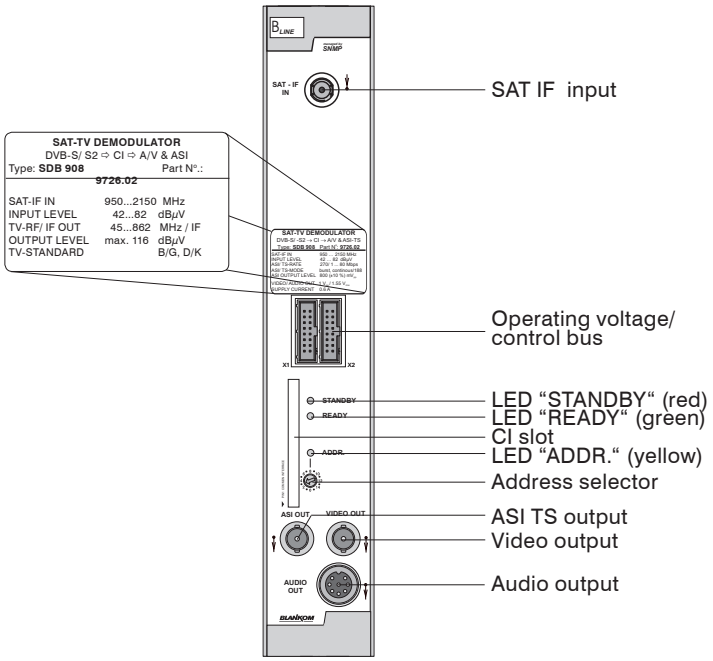
CKB 102	9650.52	activation subtitles
CKB 104	9650.54	activation BISS function
CKB 105	9650.55	activation ASI output

4. General

The SAT-TV Demodulator SDB 908 is a module of the headend system B-LINE, which is conceived as a complete system for middle sized networks. The SDB 908 demodulates DVB-S/ -S2 signals (8PSK, QPSK) into analogue audio/ video signals. A Common Interface slot enables the use of CA modules for the reception of scrambled satellite signals/ programs. Additionally the processed transport stream with the descrambled services is available on the ASI output.

All the components are programmed via a central control unit and will function independently thereafter. The status of the modules is displayed via LED's (»chapter 7 "Status LED's").

5. Front view



managed by
SNMP

6. Functional description

The SAT IF input signal is fed to the DVB-S/ -S2 front end, where the selection of a transponder and its QPSK or 8PSK demodulation are done. The data stream is routed by a switching matrix either to the Common Interface or directly to the DVB module consisting of a demultiplexer and a H.264/ AVC & MPEG2 decoder.

An analogue video- and an associated stereo-audio signal are generated within the DVB module. The video signal is filtered and the audio signal is processed by a DA converter afterwards. The SDB 908 supports the output of additional services like Teletext, WSS, VPS and optional the display of subtitle.

The analogue signal outputs were fed by buffer amplifiers (for the pin assigment of the audio socket see chapter 8). The audio outputs are balanced to ground. A respective CA module with smart card, which is supported by the device, has to be used for descrambling.[1]

Multi service decryption is possible if there are not any restrictions by the CAM itself or by the service provider. With this module its possible to choose elementary streams of a service for decryption. So the ressources of the respective CAM/ smart card combination can be used optimally.

BISS decryption can be performed by activating the software option CKB 104. Supported are the BISS mode 1 and the BISS mode E with entering the necessary injected ID, but not the BISS mode E with the optional buried ID. The activation of the software option CKB 105 allows the output of the processed data stream on the ASI TS connector. The multi service decryption is enabled therby.

[1] The design of the Common interface of this module is done according to DVB standards. Because of the dependencies in interaction of the DVB signals, CA modules and smart cards we can not assure a general functional capability for all application possibilities. Please contact our servic department for further assistance.

7. Settings

7.1 Setting with Headend Controller

· Adjustment of the addresses at the Bus Extender BEB x00 and at the modules
· Activation of the programming mode on each module by selecting the line (BEB x00) and the module position (1... 15) at the Headend Controller(HCB x00)
→ yellow LED illuminates until the beginning of the parameter adjustment
· Adjustment of the SDB 908 parameters (see chapter 10) → green LED is switched on
· After the programming the SDB 908 will be automatically switched into the operating mode
→ yellow LED flashes shortly/ green LED is switched on

7.2 Setting with PC/ laptop

· Prerequisite for the remote programming is an “online connection” according the IP standard and an ethernet connection at the PC/ laptop
· Adjustment of the line/ position addresses at the Bus Extender BEB x00 as well as at the modules
· At the Headend Controller HCB x00 input IP address (default: 192.168.2.80)
· For “direct connection” between a PC and HCB x00 use crossover cable (RJ 45)
· For connection over a hub use a normal straight throught patch cable
· Start-up HTML browser and put in IP address as target address
· If connected correctly the web interface will be opened on the pc and a blue LED (LINK) at the HCB x00 will be lit up.

· All adjustments of the modules are specified on the web interface.

7.3 Setting with SNMP

· Prerequisite for the SNMP functionality is the use of HCB x00 with enabled SNMP software option CKB 100.
· Supported is SNMP version 1.0 [7].
· Automatic creation of the MIB based on the current headend configuration by the HCB x00.
· For setting and reading out the parameters and is to receive traps from an SNMP management software required.
· Further notes on the SNMP functionality of BLANKOM modules are listed in the SNMP manual (download: www.blankom.de).

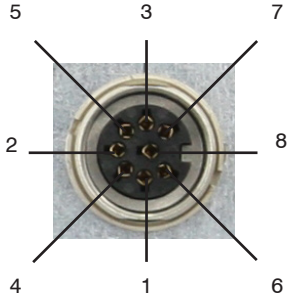
The manual instructions of the Headend Controller HCB x00 and the Bus Extender BEB x00 have to be considered.

8. Front panel LED`s

Designation (Colour)	Status	Meaning of display
STANDBY (red)	permanently on	module is in standby
	flashing	module faulty (hardware error)
READY (green)	permanently on	module working properly
	flashing	error warnings, depending on signal: - tuner not synchronized (e.g. there is no input signal) - service settings are not valid
ADDR. (yellow)	illuminated/ flashing	remote control connection/ data being exchanged

9. Audio socket

Pin assignment



1 stereo left+/ dual A+/ mono+
2 screening/ earth
3 stereo right+/ dual B+
4 stereo left-/ dual A-/ mono-
5 stereo right-/ dual B-
6 control line contact 1
7 control line contact 2
8 control line return path (earth)

Audio mode signaling

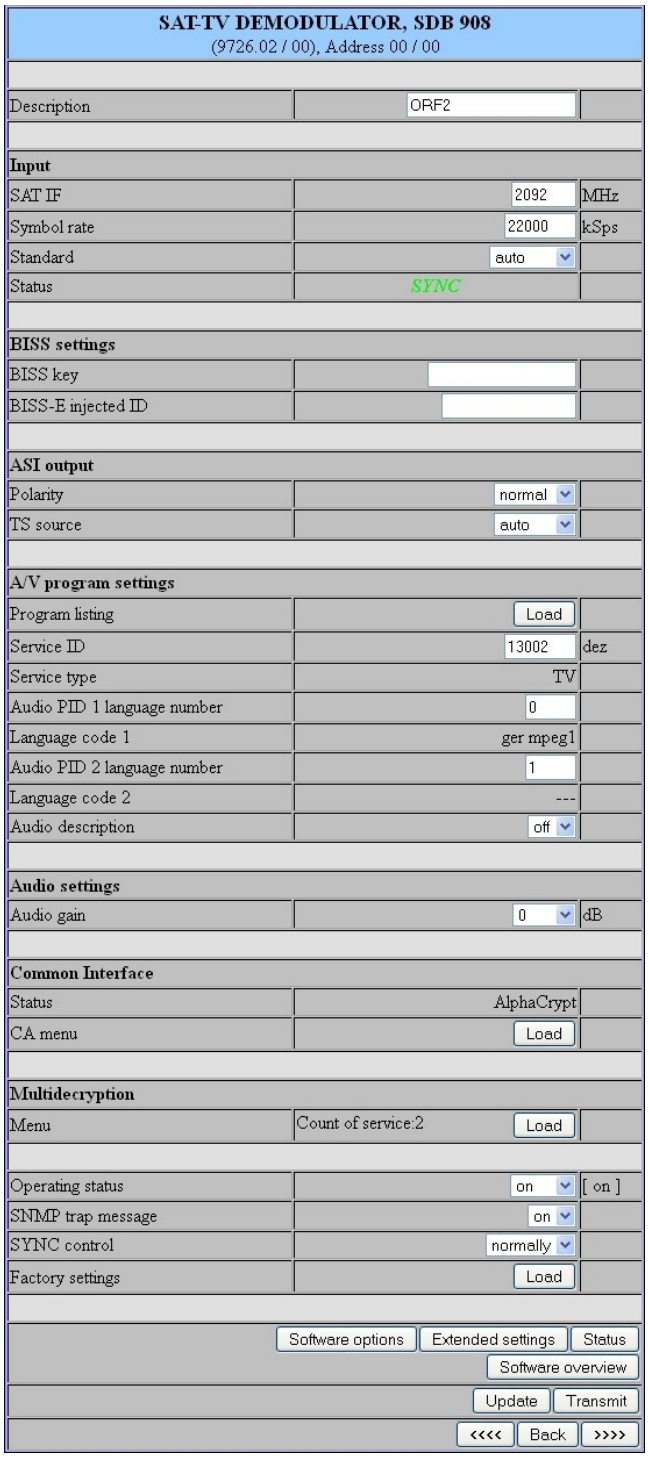
Mono Pins 6/ 8: Connection open
Pins 7/ 8: Connection closed

Stereo Pins 6/ 8: Connection closed
Pins 7/ 8: Connection open

Dual Pins 6/ 8: Connection closed
Pins 7/ 8: Connection closed
or
Pins 6/ 8: Connection open
Pins 7/ 8: Connection open

10. Programming by web server *

10.1 Main menu



Name of device, item number, address in headend

Description — Name of program (max. 30 characters)

Input
SAT IF — adjustment range: 950 ... 2150 MHz
Symbol rate — adjustment range: 1000 ... 45000 kSps
Standard — selection: auto, DVB-S, DVB-S2
Status — display whether **SYNC**hronization or **noSYNC**hronization with input

BISS settings
(will only be available if "BISS decryption" option is enabled)
BISS key — input of the 12-digit code in BISS mode 1 or the 16-digit code in BISS mode E
BISS-E injected-ID — input of the 14-digit code in BISS mode E, no input in BISS mode 1.

ASI output
(will only be available if "ASI output" option is enabled)
Polarity — selection: normal, inverse
TS source — selection: auto, original

A/V program settings
Program listing — see menu 2
Service ID — adjustment range: 0...65535
Service type — displays the type of selected service (TV, Radio)
Audio PID 1 lang. nº — adjustment range: 0...47 [1]
Language code 1 — displays the code of the selected lang. 1
Audio PID 2 lang. nº — adjustment range: 0...47 [1]
Language code 2 — displays the code of the selected lang. 2
Audio description — selection: on, off [2]

Audio settings
Audio gain — adjustment range: +6 ... -20 dB

Common Interface
Status — status message of the CA module
CA menu — see menu 3

Multidecryption
Menu — see menu 4

Operating status — selection: on, off, reset
SNMP trap mess. — on, off, if SNMP option in HCB x00 is enabled, otherwise "locked" is displayed
SYNC control — synchronization test at input. selection: fast, normally, slowly
Factory settings — see menu 10

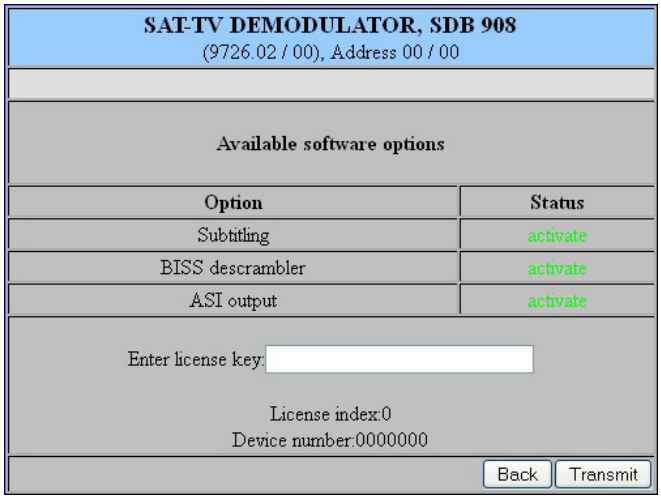
Routing to the appropriate adjustment menu:
Software options — see menu 1
Extended settings — see menu 8
Status — see menu 10
Software overview — see menu 11

[1] In the SDB 908, it is possible to select 1 or 2 audio PID's for transmitting. If you select only one language, then this is transmitted in the present audio mode (mono, stereo, dual). If you choose, however, two audio PID's, a dual tone is generated from both of them, as the dual tone 1 the language of the audio PID 1, as the dual tone 2 the language of the audio PID 2 (see also menu 8). The audio PID 2 is disabled by a non numerical character.

[2] If you activate the function of audio description, a dual tone is automatically generated if a program in the appropriate format into the selected service is transmitted, which is transmitted in dual tone 1 the original and the dual tone 2, the descriptive explanation of the image. There is however necessary that there is set as the audio PID 1 the appropriately labeled audio stream of the service.

* For further details see the HCB manual

10.2 Software options (menu 1)



SAT-TV DEMODULATOR, SDB 908
(9726.02 / 00), Address 00 / 00

Available software options

Option	Status
Subtitling	activate
BISS descrambler	activate
ASI output	activate

Enter license key:

License index:0
Device number:0000000

Back | Transmit

Name of device, item number, address in headend

Dialogue for entering a code to activate the “subtitling” (CKB 102), “BISS decryption” (CKB 104) and ”ASI output“ (CKB 105) software options . When the page is called, the current state of activation is displayed.

10.3 Loading the program list (menu 2)

SAT-TV DEMODULATOR, SDB 908
(9726.02 / 00), Address 00 / 00

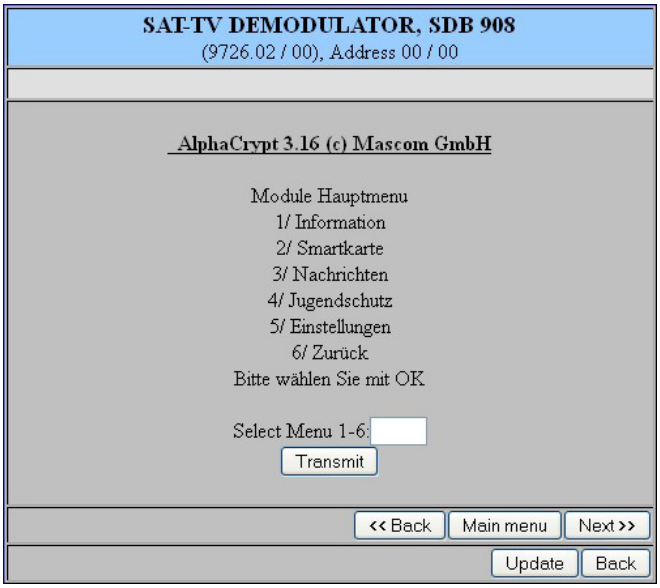
Program listing

Program name	Status	Service type	Service ID	Audio 1 language	Audio 2 language	Subtitle language	Selection
ORF1	coded	TV	13001	ger mpeg1	---	missing	Set
ORF2	coded	TV	13002	ger mpeg1	---	missing	Set
ORF2 W	coded	TV	13003	ger mpeg1	---	missing	Set
ORF2 N	coded	TV	13004	ger mpeg1	---	missing	Set
ORF2 B	coded	TV	13005	ger mpeg1	---	missing	Set
ORF2 O	coded	TV	13006	ger mpeg1	---	missing	Set
ORF2 S	coded	TV	13007	ger mpeg1	---	missing	Set
ORF2 T	coded	TV	13008	ger mpeg1	---	missing	Set
ORF2 V	coded	TV	13009	ger mpeg1	---	missing	Set
ORF2 St	coded	TV	13010	ger mpeg1	---	missing	Set
ORF2 K	coded	TV	13011	ger mpeg1	---	missing	Set
ATV	coded	TV	13012	ger mpeg1	---	missing	Set
HITRADIO OE3	free	TV	13013	ger mpeg1	---	missing	Set
ORF2E	free	TV	13014	ger mpeg1	---	missing	Set
Hallo TV German free	free	TV	13015	ger mpeg2	---	missing	Set
Hallo TV España free	free	TV	13016	spa mpeg2	---	missing	Set
Hallo TV Polska free	free	TV	13017	pol mpeg2	---	missing	Set
Folx TV	free	TV	13018	ger mpeg2	---	missing	Set
RiC	free	TV	13019	ger mpeg2	---	missing	Set

Update | Back

This menu contains a list of all H.264/ AVC- & MPEG-2 services available in the data stream. Audio and DVB subtilte language selection can take place here if there are any available. A service is adopted or changed by clicking the relevant “Set” button.

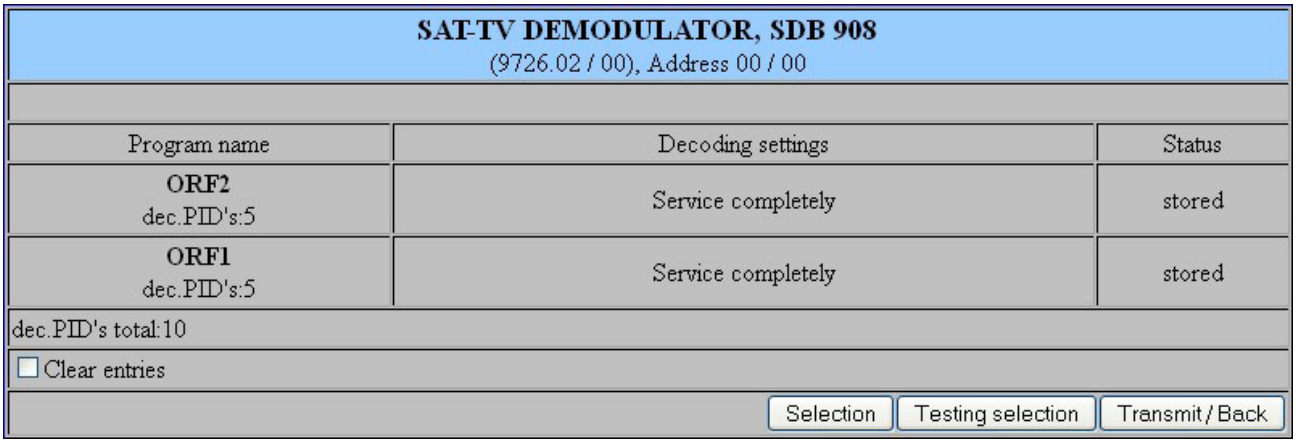
10.4 CA menu (menu 3)



Name of device, item number, address in headend

On these pages all menus implemented in the CA module are offered. The available menus are selected individually or are invoked one-by-one to do necessary settings or to get all information about the CA module.

10.5 Multi-decryption menu (menu 4)



It is important to note that the possibility of multiple decryption depends on the CA module used. The maximum number of PIDs to be decrypted is limited and maximum limit per CA module is different.

When calling this menu the selection of the services of the adjusted transponder, which were selected for decryption and whose decryption was successfully, appears. Indicated are the program name with the number of the decoded PID's, the decryption settings and the status of the program. "Stored" means, that the service was successfull decrypted and saved in the CA service list. Using the check box "Clear entries" and the "Transmit/ Back" button the entire selection will be deleted and no services are decrypted afterwards. By using the "Selection" button and the appropriate selection of the services in the multi-decryption selection menu (menu 5) the list of the services to decrypt can be changed.

Using the "Testing selection" button calls the test menu (menu 6), in which the decryption state of all programs in the CA service list will be tested again and possible occurring errors will be listed.

10.6 Multi-decryption selection (menu 5)

SAT-TV DEMODULATOR, SDB 908
(9726.02 / 00), Address 00 / 00

Program selection			Decoding settings					
Selection	Program name	Status	private Streams	other Audio Streams	MPEG 1/2 Audio Streams	Subtitling Streams	VBI Data Streams	PID drop list
☑	ORF1	coded	☑	☑	all	all	☑	
☑	ORF2	coded	☑	☑	all	all	☑	
☐	ORF2 W	coded	☐	☐	no	no	☐	
☐	ORF2 N	coded	☐	☐	no	no	☐	
☐	ORF2 B	coded	☐	☐	no	no	☐	
☐	ORF2 O	coded	☐	☐	no	no	☐	
☐	ORF2 S	coded	☐	☐	no	no	☐	
☐	ORF2 T	coded	☐	☐	no	no	☐	
☐	ORF2 V	coded	☐	☐	no	no	☐	
☐	ORF2 St	coded	☐	☐	no	no	☐	
☐	ORF2 K	coded	☐	☐	no	no	☐	
☐	ATV	coded	☐	☐	no	no	☐	
☐	HITRADIO OE3	free	☐	☐	no	no	☐	
☐	ORF2E	free	☐	☐	no	no	☐	
☐	Hallo TV German free	free	☐	☐	no	no	☐	
☐	Hallo TV España free	free	☐	☐	no	no	☐	
☐	Hallo TV Polska free	free	☐	☐	no	no	☐	
☐	Folx TV	free	☐	☐	no	no	☐	
☐	RiC	free	☐	☐	no	no	☐	
☐	AlphaCrypt	free	☐	☐	no	no	☐	
☐	Schwaiger OTA Service	free	☐	☐	no	no	☐	
☐	VESTEL DOWNLOAD	free	☐	☐	no	no	☐	

☐ Reset CA module

Simultaneous decoding of several programs depends on CA module and smart card!

Update | Transmit

Back

In this menu all services of the adjusted transponder and their CA status are listed. The services are selectable for decryption. For each of this selected services one can determine, what streams or PID‘s are to be decrypted. That‘s important because the maximum number of the decryptable PID‘s is limited and this limit has a different size per CA module.

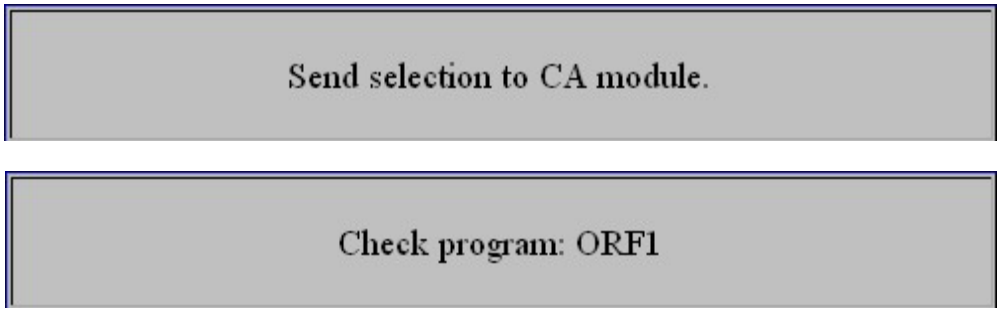
In the selection boxes “MPEG 1/ 2 Audio Streams“ respective “Subtitling Streams“ all, no or individual streams are selectable. If one wants to select more than one stream, but not all, the selection field ”all“ in the box is to be selected and in the column “PID-Drop list“ all PID‘s have to be entered, that shall not be decrypted. [1]

In the column “PID-Drop list“ all PID‘s are listed, that shall not be decrypted. The PID‘s can be given in decimal or hexadecimal format and have to be separated by a semicolon. The maximum number of PID‘s is 10. [2]

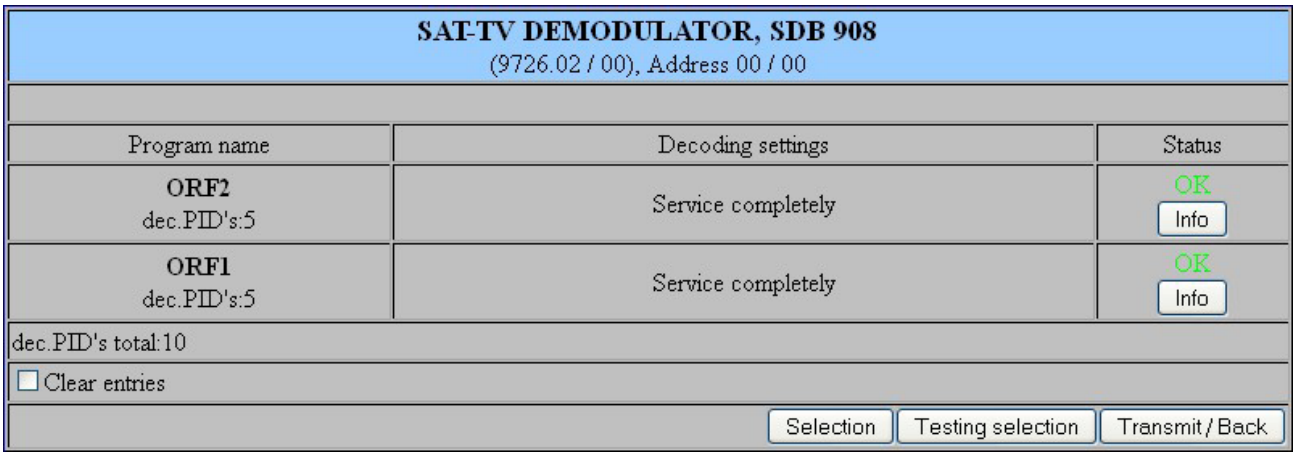
Individual CA modules have to be initialized once again before the CA services will be sent to the module. To do so the option “Reset CA-Modul“ can be activated.

[1] “Other Audio Streams“ includes all AC3 and DTS streams. “Private Streams“ selects all streams which are not captured by the other selection fields.
[2] Particularly PID‘s can be given here, which are active only at times and no authorisation for decryption is available for them.

10.7 Multi-decryption test (menu 6)

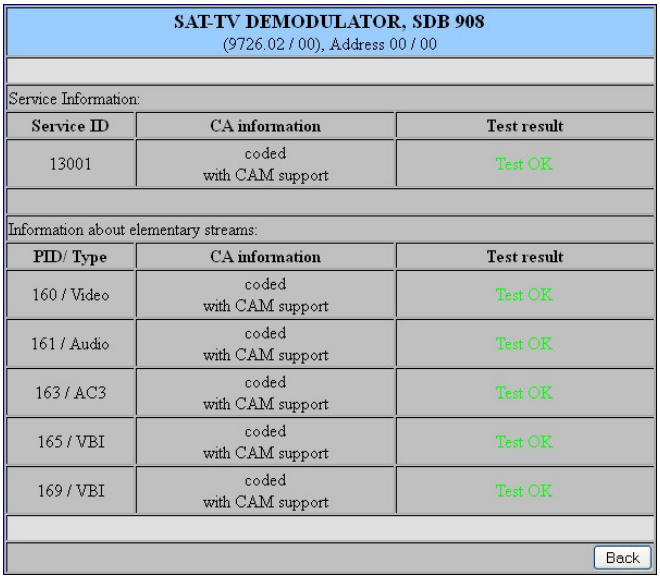


First all saved services of the CA service list are tested for the current decryption status.



At the end of the test the multi-decryption menu (menu 4) is displayed. The „Info“ button shows the test result of the respective service and the relevant information page of the test (menu 7) is displayed.
By clicking the “Transmit/ Back“ button all settings are transmitted. The “Selection“ button routes back to menu 5 where you can change input values, e.g. if too much PID‘s were selected.

10.8 Multi-decryption test information (menu 7)



Name of device, item number, address in headend

On this page information about the test result of the selected service are displayed.

First the final result of the test with service ID and CA information is listed, than for each requested PID the type, the CA information and the test result.

10.9 Extended settings (menu 8)

SAT-TV DEMODULATOR, SDB 908 (9726.01 / 00), Address 00 / 15		
Video		
Video output	on	
Color bar	off	
Color system	PAL	
Audio		
Sound channel selection (Audio PID 2 is selected).The selection must only be made if dual tone is transmitted in the respective audio TS. The audio channel to be transmitted has to be selected.		
Audio PID 1	Dual I	
Audio PID 2	Dual I	
Dolby-Mode		
DD+ downmix	Auto	
VPS settings		
CNI code	0x000	
Source audio mode	MPEG	
Source PIL	A056 (PDC)	
CA settings		
SDT/PMT processing	on	
Mode CA-PMT update	CA-PMT-Entry	
Use of date & time	off	
Smart card activation mode	deactivated	
CA check time	0	min
Subtitling		
Mode	off	
Settings DVB-Subtitling		
DVB language index	0	
DVB language code	---	
Use extended ID's	yes	
Settings Teletext-Subtitling		
Teletext page	0	
Language group	west	
Update / Transmit		
Back		

Name of device, item number, address in headend

Video settings of the video parameters
Video output selection: on, auto off, auto colour palette bar
Color bar selection: on, off
Color system selection: PAL, SECAM, NTSC

Audio
A setting of the following fields is only necessary when two audio PID's are selected for transmission in the main menu. For both of these audio data streams, a dual tone is generated. If even a dual tone is transmitted in one or two data streams, so you can choose with the two setting fields, which of the two tones per audio stream to be used for the generation of the resulting dual tone.

Dolby Mode
Only available if the software option „Dolby mode" is enabled
Auto - automatic setting Stereo / Pro Logic
L_t / R_t - Pro Logic Mode 2
L_0 / R_0 - Stereo

VPS settings
CNI code adjustment range: 0x000…0xFFF hex.
Source audio mode selection: MPEG, A056(MPEG)
Source PIL selection: A056(PDC), A056, PDC, TimerControlCode

CA settings [1]
SDT/ PMT processing selection: on, off
Mode CA-PMT update selection: CA-PMT-List, CA-PMT-Entry (isn't supported by all CAM's)
Use of date & time selection: on, off
Smart card act. mode selection: activated, deactivated
CA check time input in min

Subtitling
(Only available if the software option"Subtitling" is enabled)
Mode selection: Off, Teletext, DVB

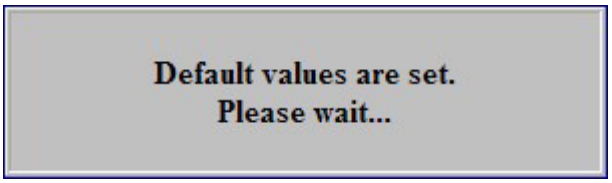
Settings DVB-Subtitling
(Only available if the software option"Subtitling" is enabled)
DVB languages index adjustment range: 0...16
DVB language code displays the code of the language selected
Use extended ID's selection: yes, no

Settings Teletext-Subtitling
(Only available if the software option"Subtitling" is enabled)
Teletext page adjustment range: 0...899
Language group selection: west, east, russian, arabic, farsi

[1] The settings listed under "CA settings" are selected individually depending on the particular CA module, since the individual modules may require appropriate resources and timelines for their initialization. Furthermore, in the second setting point, the modes of the CA PMT updates are set. You can choose between CA-PMT-List and CA-PMT-Entry, but the latter is not supported by all CAM's. Some CA modules require to initialize the resource "date & time". For all other modules, this setting should remain disabled.

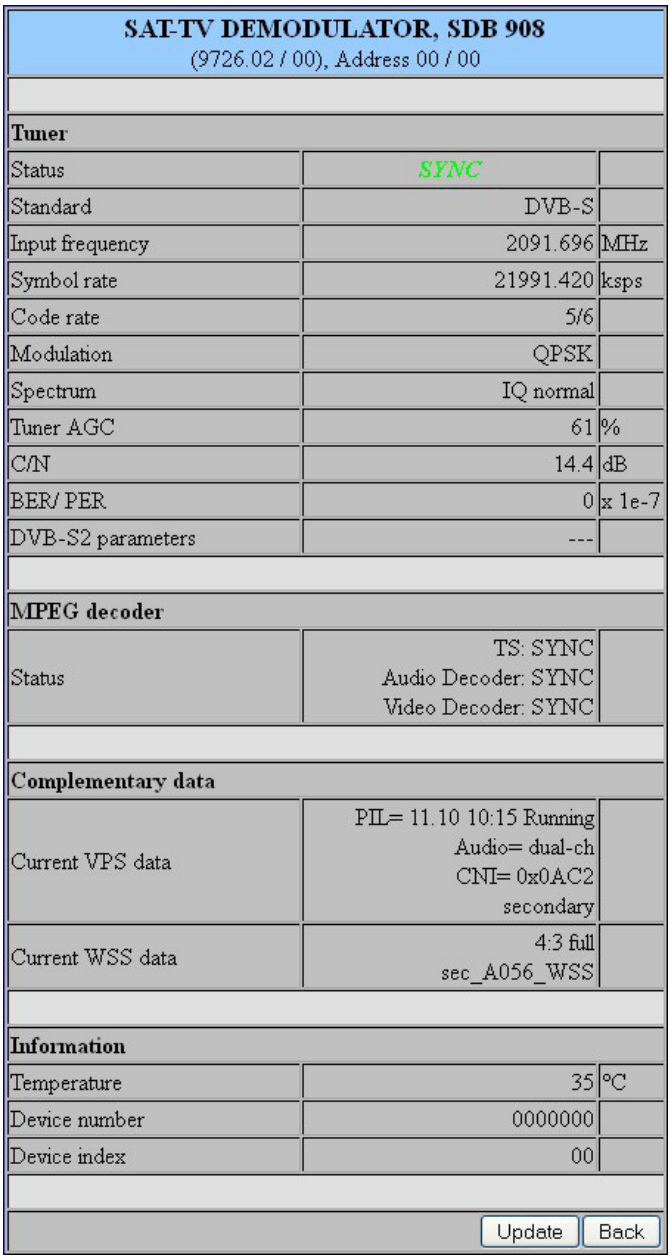
10.10 Factory settings (menu 9)

When this menu item is requested, at first a security query whether it really set all parameters to the factory default settings pops up.



Affirming the query, all settings stored in the EEPROM will be deleted and replaced by the default settings. The module will go back to these default values. Once the setting process is over, there will be an automatic return to the main menu.

10.11 Status of the device (menu 10)



SAT-TV DEMODULATOR, SDB 908 (9726.02 / 00), Address 00 / 00		
Tuner		
Status	*SYNC*	
Standard	DVB-S	
Input frequency	2091.696	MHz
Symbol rate	21991.420	ksps
Code rate	5/6	
Modulation	QPSK	
Spectrum	IQ normal	
Tuner AGC	61	%
C/N	14.4	dB
BER/ PER	0	x 1e-7
DVB-S2 parameters	---	
MPEG decoder		
Status	TS: SYNC Audio Decoder: SYNC Video Decoder: SYNC	
Complementary data		
Current VPS data	PIL= 11.10 10:15 Running Audio= dual-ch CNI= 0x0AC2 secondary	
Current WSS data	4:3 full sec_A056_WSS	
Information		
Temperature	35	°C
Device number	0000000	
Device index	00	
	Update Back	

Name of device, item number, address in headend

Tuner

Status	displays whether **SYNC**hronization or **noSYNC**hronization
Standard	displays the receiv. standard of the signal
Input frequency	displays the actual input frequency
Symbol rate	displays the actual symbol rate
Code rate	displays the FEC
Modulation	displays the signal modulation
Spectrum	displays the spectral inversion
Tuner AGC	in %
C/N	in dB
BER/ PER	bit error rate (DVB-S)/ packet error rate (DVB-S2)
DVB-S2 parameters	according to the signalling DVB-S2 information

MPEG decoder

Status	Synchronization status for the TS audio and video decoder

Complementary data

Current VPS data	displays detailed information about current VPS data
Current WSS data	displays detailed information about current WSS data

Information

Temperature	temperature of terminals board
Device number	display of the device number
Device index	display of the device index (hardware)

10.12 Software overview (menu 11)

SAT-TV DEMODULATOR, SDB 908 (9726.02 / 00), Address 00 / 00	
Version	
AP controller	9726.02-81.01 AP Controller V1.00 09.10.2013 JR,JH
MPEG decoder	9726.01-86.01 MPEG4_CI V0.10 03.09.13 S.
FPGA-ASI encoder	9726.01-87.01 ASI-Encoder V0.04 29.08.2013 WE
	Back

Name of device, item number, address in headend

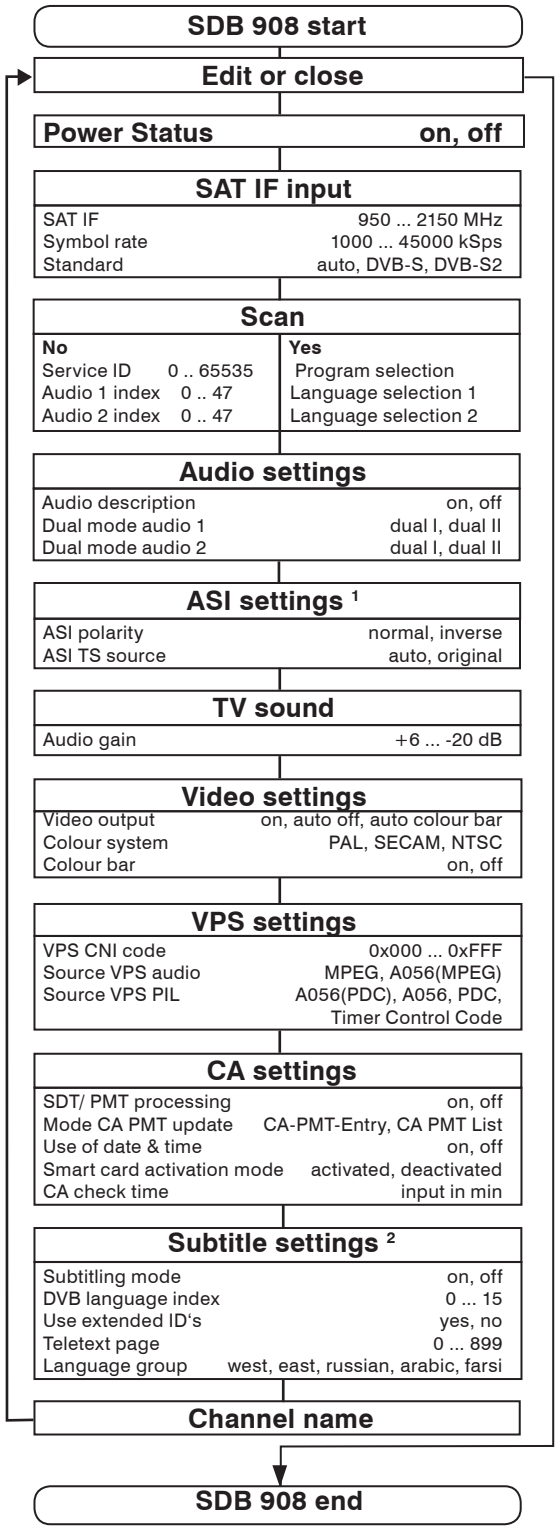
Version
Displays the software versions for the controllers as follows:

- Controller of terminals board

- MPEG decoder

- FPGA ASI encoder

11. Manual menu control at the Headend Controller (HCB x00)


SDB 908 start
Edit or close
Power Status on, off
SAT IF input
SAT IF 950 ... 2150 MHz
Symbol rate 1000 ... 45000 kSps
Standard auto, DVB-S, DVB-S2
Scan
No
Service ID 0 .. 65535
Audio 1 index 0 .. 47
Audio 2 index 0 .. 47
Yes
Program selection
Language selection 1
Language selection 2
Audio settings
Audio description on, off
Dual mode audio 1 dual I, dual II
Dual mode audio 2 dual I, dual II
ASI settings 1
ASI polarity normal, inverse
ASI TS source auto, original
TV sound
Audio gain +6 ... -20 dB
Video settings
Video output on, auto off, auto colour bar
Colour system PAL, SECAM, NTSC
Colour bar on, off
VPS settings
VPS CNI code 0x000 ... 0xFFF
Source VPS audio MPEG, A056(MPEG)
Source VPS PIL A056(PDC), A056, PDC, Timer Control Code
CA settings
SDT/ PMT processing on, off
Mode CA PMT update CA-PMT-Entry, CA PMT List
Use of date & time on, off
Smart card activation mode activated, deactivated
CA check time input in min
Subtitle settings 2
Subtitling mode on, off
DVB language index 0 ... 15
Use extended ID's yes, no
Teletext page 0 ... 899
Language group west, east, russian, arabic, farsi
Channel name
SDB 908 end

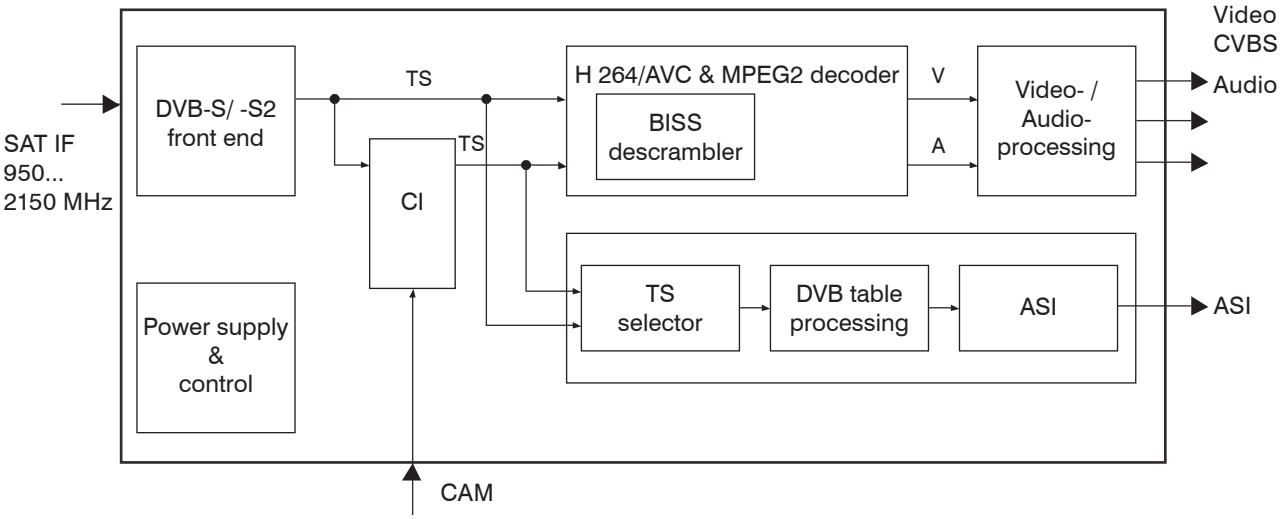
[1] only available if "ASI output" option is enabled

[2] only available if "Subtitle" option is enabled

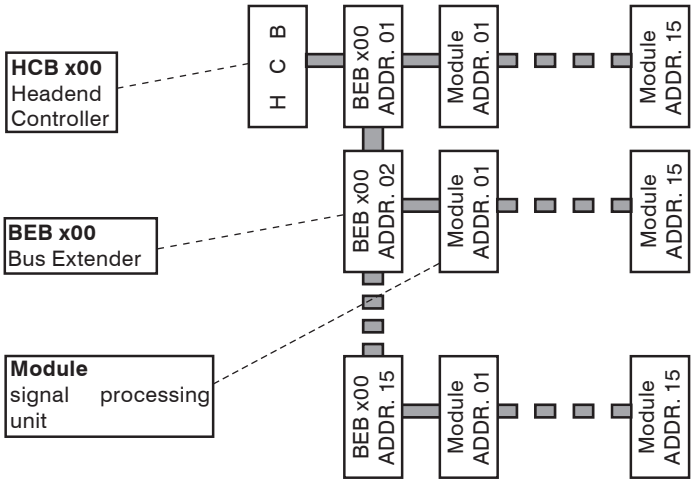
12. Trap messages

Item	Message	Message type	Explanation
01	Signal OK	INFORMATION	Component working, everything ok
02	Input not sync	WARNING	Input not synchronized
03	MPEG Error	CRITICAL	MPEG error
04	System reset	WARNING	System has been reset after internal error
05	MPEG-Decoder not sync	WARNING	MPEG decoder not synchronized
06	Power fail	CRITICAL	Power supply error
07	Decoding of service ... fail	WARNING	Error on descrambling of service...
08	Decoding of service ... ok	INFORMATION	Descrambling of service ... ok

13. Block diagram

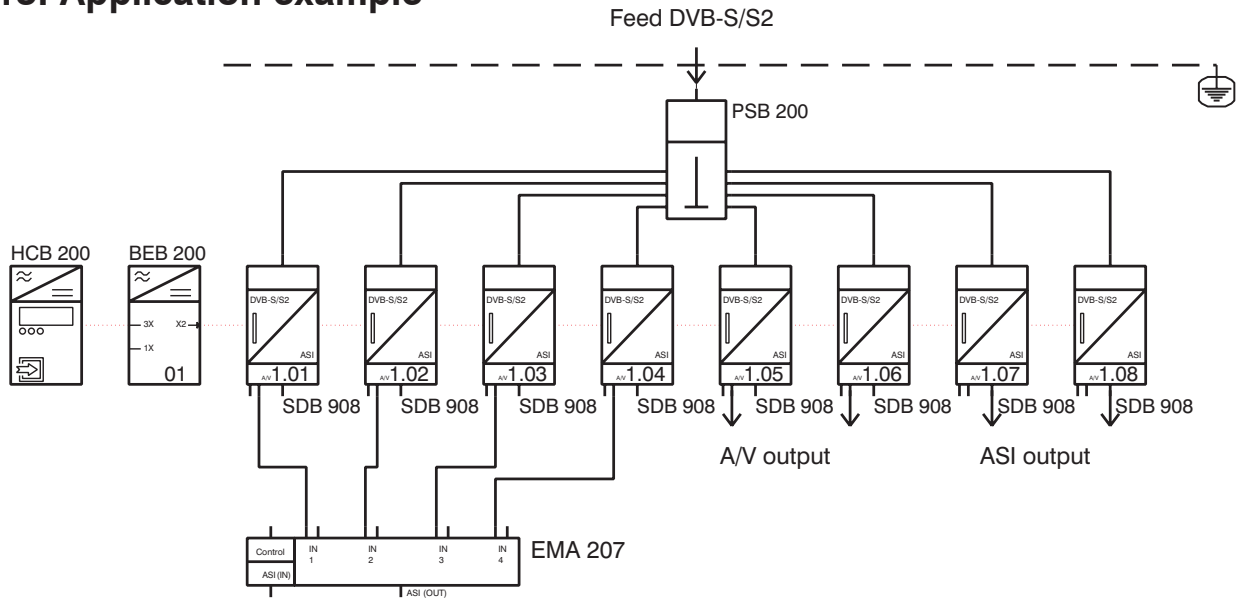


14. Headend bus structure



The number of the possible module connections (00 ... 15) to a BEB x00 depends on the total power consumption of this line.

15. Application example



16. Technical data

SAT IF input

Frequency range	950 … 2150 MHz
Frequency step	1 MHz
AFC range	± 3 MHz (SR < 10 MSps) ± 5 MHz (SR ≥ 10 MSps)
AGC level range	42 … 82 dBµV
Connector	F socket
Impedance	75 Ω

DVB-S demodulator (QPSK)

Symbol rate	1 … 45 MSps
Code rate	1/2, 2/3, 3/4, 5/6, 7/8
Roll-off	35 %
Signal processing	EN 300 421 (DVB - S) [1]

DVB-S2 demodulator (QPSK, 8PSK)

Symbol rate	QPSK	2 … 47 MSps
	8PSK	2 ... 31,5 MSps
Code rate	QPSK	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
	8PSK	3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Roll-off		20, 25, 35 %
Signal processing		EN 302 307 (DVB - S2) [2]

ASI output

Data rate	270 Mbps
Polarity	normal/ inverted
Mode	burst, continuous
TS data rate	according symbol rate and coding
TS mode	188 Bytes
Output voltage	800 mV_{pp} ± 10 %
Connector	BNC socket
Impedance	75 Ω
Signal processing	EN 50083-9 [3]

Decryption interface

Common Interface	PCMCIA-Slot according EN 50221 [4]
Operating voltage	5 V
Multi-Service decryption	21 services max.

MPEG decoder

Video	H.264/ AVC Level 4.1 HP, MPEG-2 MP@HL
Audio 1	MPEG-1 Layer 1&2 , AAC, AC3[1]
Audio 2	MPEG-1 Layer 1&2

Video output

Output voltage	1 V_{pp}
Connector	BNC socket
Impedance	75 Ω

Audio output

Rated level (at digital -6 dBFS)	6 dBu
max. output level	12 dBu
Output impedance	≤ 30 Ω
Output	symmetrical, free-of-ground
Connector	socket according DIN 45326[5] IEC 130-9-20

Operating parameters

Voltage/ current (w/o CAM)	12 V (± 0.2 V)/ 600 mA
Residual ripple of supply voltage	≤ 10 mV_{pp}

Environmental conditions

Temperature range	-10 ... +55 °C
Temperature range for data keeping	5 ... 45 °C
Relative humidity	≤ 80 % (non condensing)
Method of mounting	vertical
Location of mounting	splash-proof and drip-proof

Miscellaneous

Dimensions (w x h x d)	
without 19”-adapter	50 x 276 x 148 mm
with 19”-adapter	50 x 301 x 148 mm
Weight	1,300 g

Delivery content

1x Bus connector
1x Audio connecting cable ASK 525
1x Video connecting cable VVK 526

[1] only supported in the device variant 9726.01

17. Glossary

AAC	**A**dvanced **A**udio **C**oding
AC3	**A**daptive Transform **C**oder **3**
AP	**A**nschluss**pl**atte (Terminals board)
ASI	**A**synchronous **S**erial **I**nterface
AV	**A**udio/**V**ideo
BISS	**B**asic **I**nteroperable **S**crambling **S**ystem
CA	**C**onditional **A**ccess
CAM	**C**onditional **A**ccess **M**odule
CI	**C**ommon **I**nterface
CCIR	**C**omité **C**onsultatif **I**nternational des **R**adiocommunications
DVB	**D**igital **V**ideo **B**roadcasting (-C Cable, -S Satellite, -S2 Satellite 2, -T Terrestrial)
FPGA	**F**ield **P**rogrammable **G**ate **A**rray
HTML	**H**yper**t**ext **M**arkup **L**anguage
HTTP	**H**yper**t**ext **T**ransfer **P**rotocol
ID	**Id**entifier
IIC	**I**nter-**I**ntegrated **C**ircuit (I²C-Bus, data bus within device)
IP	**I**nternet **P**rotocol
LED	**L**ight **E**mitting **D**iode
MC	**M**icro**c**ontroller
MIB	**M**anagement **I**nformation **B**ase
MPEG	**M**oving **P**icture **E**xperts **G**roup
NTSC	**N**ational **T**elevision **S**ystems **C**ommittee [1]
PAL	**P**hase **A**lternating **L**ine [1]
PCR	**P**rogramme **C**lock **R**eference
PDC	**P**rogramme **D**elivery **C**ontrol, synonym of VPS
PID	**P**acket **I**dentifier
PMT	**P**rogramme **M**ap **T**able
PLL	**P**hase-**l**ocked **l**oop,
SECAM	**Sé**quentiel **c**ouleur **à m**émoire [1]
SNMP	**S**imple **N**etwork **M**anagement **P**rotocol
SPI	**S**erial **P**eripheral **I**nterface
SPTS	**S**ingle **P**rogramme **T**ransport **S**tream
TS	**T**ransport **S**tream
TV	**Tel**e**v**ision
VPS	**V**ideo **P**rogramming **S**ystem
WSS	**W**ide **S**creen **S**ignalling

[1] color-encoding systems of analogue television

18. Bibliography

[1] EN 300 421: Digital Video Broadcasting (DVB): Framing structure, channel coding and modulation for 11/ 12 GHz satellite services

[2] EN 302 307: Digital Video Broadcasting (DVB): Second generation framing structure, channel coding and modulation systems for Broadcasting, Interactive Services, News Gathering and other broadband satellite applications

[3] EN 50083-9: Cabled distribution systems for television, sound and interactive multimedia signals, part 9: Interfaces for CATV/SMATV headends and similar professional equipment for DVB/ MPEG-2 transport streams

[4] EN 50221: Common interface specification for conditional access and other digital video broadcasting decoder applications; German version EN 50221:1997 + Corrigendum:2000

[5] DIN 45326/ EN 60130-9: Connectors for frequencies below 3 MHz - Part 9: Circular connectors for radio and associated sound equipment, 2000-05

[6] EN 60728-11: Cable networks for television signals, sound signals and interactive services Part 11: Safety (IEC 60728-11:2005); German version EN 60728-11:2005

[7] RFC 1157 Request for Comments (RFC): RFC Database URL: *http://www.rfc-editor.org/rfc.html*

19. Document history

Version	Date	Modification	Author
1.00	14.10.2013	basic document	Häußer
1.01	15.07.2014	software options added (chapter 3), device variant 9726.01 and Dolby Mode (in chapter 10.9) added, revision tech. data	Appelfelder

Options and other TV standards available upon request. Subjects to changes due to technical progress.

CE Declaration of Conformity

Manufacturer: BLANKOM Antennentechnik GmbH
Hermann – Petersilge – Straße 1
07422 Bad Blankenburg
Germany

Product Name: SAT-TV Transmodulator

Type Name: SDB 908

Type N°: 9726.01
9726.02

BLANKOM Antennentechnik GmbH confirms that the mentioned product meets the guideline(s) of the Council for the approximation of legislation of the member states.

Electromagnetic compatibility (2004/ 108/ EC)
The following standards are met: DIN EN 50083-2: 2007-04 (EN 50083-2:2006-06)

Low voltage guideline (2006/ 95/ EC)
The following standards are met: DIN EN 60950-1: 2006-04 (EN 60950-1:2006-11)
Information technology equipment -Safety-

Restriction of hazardous substances (2011/ 65/ EC)
The following standards are met:
DIN EN 50581: 2013-02 (EN 50581:2012)

Bad Blankenburg, Germany
2013-10-14

Dr. Piero Kirchner
(Managing Director)